

Abstract of the Disclosure

A synchronous cross-connect switch for routing data samples from a source node to a destination node comprises a mesh architecture including a plurality of inputs for receiving one or more of the data samples presented to the cross-connect switch. The mesh architecture includes a plurality of nodes operatively interconnected with one another using one or more half-duplex links. Each of the nodes further includes a receiver and a transmitter. Each node further includes an input time-slot-interchanger (TSI) operatively coupled to a first half-duplex link and to the receiver, the input TSI being configurable to selectively reorder one or more data samples received by the receiver, and an output TSI operatively coupled to a second half-duplex link and to the transmitter, the output TSI being configurable to selectively reorder one or more data samples to be transmitted by the transmitter. A controller operatively coupled to the receiver and to the transmitter is configured to selectively route a data sample to at least one of an output of the cross-connect switch and an adjacent node in the mesh architecture in a conflict-free manner.